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EXAMINER	
HAVAN, HUNG T	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/585,406	Applicant(s) URANO, YASUNORI	
	Examiner HUNG HAVAN	Art Unit 2128	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4-9 and 11-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4-9 and 11-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Response to Amendments

Claim Status

1. In the amendments filed 07/28/2010, the following occurred: Claims 1-2, 4-9, are 11-15 were amended. Claims 3, 10, and 16 were canceled. Claims 1-2, 4-9, 11-15 are currently pending in Instant Application.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> **The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.**

2. Claims 1-2, 4-9, and 11-15 are rejected under 35 U.S.C. 112, second paragraph, as being **indefinite** for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As per claim 1, the word "means" is preceded by the word(s) "a control value operation" in an attempt to use a "means" clause to recite a claim element as a means for performing a specified function. However, immediately following the word "means" is the words "for supplying a control value". It is unclear whether the claimed means is "for control value operation" or "for supplying a control value" and therefore it is impossible to determine the equivalents of the element, as required by 35 U.S.C. 112, sixth paragraph. Therefore, the claim does not properly invoke 35 U.S.C. 112, sixth paragraph as a "means or step plus function" construct. See MPEP 2181.

3. The above cited rejections are merely exemplary.

4. The Applicant(s) are respectfully requested to correct all similar errors.

5. Claims not specifically mentioned are rejected by virtue of their dependency.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. **Claims 1-2, 4-9, and 11-15** are rejected under 35 U.S.C. 103(a) as being unpatentable over ***Hagiwara et al (US Pub. No. 2001/0023393 A1)(hereinafter as Hagiwara)*** in view of ***"A Matlab-Based Modeling and Simulation Package for Electric and Hybrid Electric Vehicle Design" by Butler et al (hereinafter as Butler)***.

Hagiwara discloses: As per **claim 1** (currently amended), an engine transition test instrument **(¶ [0007])** comprising:

a virtual engine tester for simulating a transition state of a virtual engine in which a rotational speed or torque of the virtual engine changes with time **(¶ [0007] and [0008], lines 1-**

8, teaches a simulator having packages for automatic vehicle transmission controllers, which can simulate non-linear behavior of hydraulic actuators in real time.),

wherein the virtual engine tester comprises

a simulator for simulating the behavior of the virtual engine by a transition engine model **(¶ [0008] and ¶ [0034], lines 1-9, teaches a simulator having computer-aided design programs for verifying an algorithm of a shift controller of an automatic transmission wherein the computer-aided design programs include a first model describing behavior of the engine, second model describing behavior of the transmission)** based on data obtained by driving an actual engine while changing a value of at least one controlled factor **(¶ [0049], lines 1-13 and [0050], lines 1-15, teaches various sensors are provided at the engine including a first rotational speed sensor that generates a signal indicative of the rotational speed of the transmission input shaft. "Driving an actual engine" is broadly interpreted as running an engine under various condition such as different gear ratios as disclosed by the prior art; and not limited to the physical action of a driver and vehicle.)**;

a virtual controller that emulates an actual controller that controls the actual engine, and supplies an engine control signal to the simulator**(¶ [0032], lines 1-11 and ¶ [0033], lines 12, teaches the simulator has a group of pseudo-signal generators. The pseudo signals are used to operate the hydraulic actuators such as clutches. Other pseudo signals and the vehicle speed are generated by generators and are input to the simulator main unit. The simulator main unit corresponds to the claimed virtual controller.)**; and

a control value operation means for supplying a control value for the controlled factor to the virtual controller causing simulation results by the simulator to be displayed on a display means **(¶ [0035], lines 1-10, teaches simulator unit performs calculation of outputs of the first to third models and verifies and evaluates the stored shift control algorithm while outputting the results of verification and evaluation through a display),**

wherein the control value operation means causes the control value used for the simulation to be displayed in a time-series graph on the display means along with the simulation results **(Figs. 19A, 19B, and 19C, and ¶ [0093])**, and

the control value operation means updates the control value displayed in the graph to obtain a new control value **(Fig. 19A and 19C and ¶ [0093] – [0094], teaches calculated (outputted) values of the shift control algorithm are displayed in a graph for verification and evaluation by changing colors of the lines indicative of the calculated and actual values so that they can be discriminated from each other)**.

Hagiwara does not expressly disclose updates according to a point-and-drag operation by an operator.

Butler, however, teaches updates according to a point-and-drag operation by an operator **(page 1771, § II. Drive Train Design Methodology, ¶ 3 of section, lines 10-13, and Fig. 2 and Fig 3, teaches a graphical simulation interface which has drag and drop support to connect components and therefore updates a component.)**

Hagiwara and Butler are analogous art because they are from similar problem solving area of vehicle simulation. At the time of the invention it would have been obvious to person of

ordinary skill in the art to combine the teachings of modeling of different drive cycles using a graphical simulation interface which has drag and drop support as discuss in Butler in the engine model and simulator discussed by Hagiwara for the purpose of simulation of controllers or control systems to aid engineers in modifying and optimizing characteristics of controls such as transmission controls **(Hagiwara: ¶ [0004], lines 9-13)**.

Hagiwara discloses: As per **claim 2** (currently amended), the engine transition test instrument according to claim 1, further comprising:

> a means for conducting a transition test on the actual engine using the new control value **(¶ [0049], lines 1-13 and [0050], lines 1-15, teaches various sensors are provided at the engine including a first rotational speed sensor that generates a signal indicative of the rotational speed of the transmission input shaft.)**.

Hagiwara does not expressly disclose means for updating a transition engine model in the simulation means based on test results by the means for conducting the transition test.

Butler, however, teaches a means for updating a transition engine model in the simulation means based on test results by the means for conducting the transition test **(page 1771, § II. Drive Train Design Methodology, ¶ 1 of section, lines 6-10, and ¶ 3, lines 8-9, teaches user can switch components in and out of a vehicle model and the component models can be created from empirical equations.)**.

Hagiwara discloses: As per **claim 4** (currently amended), the engine transition test instrument according to claim 1, wherein the control value operation means causes a target value for the

simulation by the simulator to be displayed on the display means in parallel with the simulation results **(Fig. 19A and ¶ [0093], lines 1-7, shows the driveshaft torque TDS and the corresponding engine speed Ne on the same graph)**.

Hagiwara discloses: A per **claim 5** (currently amended), the engine transition test instrument according to claim 1, wherein with respect to the portion in which the difference between the simulation results and a target value exceeds a permissible limit, the control value operation means causes the simulation results to be displayed in a display pattern different from that for other portions **(Fig. 19A and 19C and ¶ [0094], lines 1-10, teaches the shift control algorithm can be verified and evaluated by changing colors of the lines indicative of the calculated and actual values such that they can be discriminated from each other on the display. Examiner interprets "exceeds a permissible limit" as the portion where actual and simulated values are not the same. These portions would display in two lines, presumably in different colors, as opposed to a single line where the two values match.)**.

Hagiwara discloses: As per **claim 6** (currently amended), the engine transition test instrument according to claim 1, wherein with respect to the control value **(i.e. drive shaft torque, TDS)** that corresponds to a portion in which the difference between the simulation results and a target value exceeds a permissible limit, the control value operation means causes the control value to be displayed in a display pattern different from that for other portions **(Fig. 19A and 19C and ¶ [0094], lines 1-10, teaches the shift control algorithm can be verified and evaluated by changing colors of the lines indicative of the calculated and actual values such that they can**

be discriminated from each other on the display. Examiner interprets "exceeds a permissible limit" as the portion where actual and simulated values are not the same. These portions would display in two lines, presumably in different colors, as opposed to a single line where the two values match.).

Hagiwara discloses: As per **claim 7** (currently amended), the engine transition test instrument according to claim 1, wherein the control value operation means divides simulation time into time slits of a unit period of time, and causes the time slit in which an integrated value of the difference between the simulation results and a target value exceeds a threshold value to be displayed in a display pattern different from that for the other time slits (**¶ [0083], lines 1-8, [0090], lines 1-14, [0094], lines 1-10 and Fig. 5, teaches 200 µsec simulation cycle was used. Specifically, the prior art reports "the non-linear clutch section (and the integral factor) was simulated using the same interval of 200 µsec., the simulation result reveals that the calculated value (marked by "b") diverged from a desired value (marked by "a") in the shift control algorithm". Examiner interprets "exceeds a threshold value" as the portion where actual and simulated values are not the same. These portions would display in two lines, presumably in different colors, as opposed to a single line where the two values match.).**

Hagiwara discloses: As per **claim 8** (currently amended), an engine transition test method comprising:

a first step of creating a transition engine model as a virtual engine created **(¶ [0008], lines 15-20 and ¶ [0034], lines 1-9, teaches first model describing behavior of the engine, second model describing behavior of the transmission)** based on data obtained by driving an actual engine while changing a value of at least one controlled factor in a transition state in which an engine rotational speed or torque changes with time **(¶ [0049], lines 1-13 and [0050], lines 1-15, teaches various sensors are provided at the engine including a first rotational speed sensor that generates a signal indicative of the rotational speed of the transmission input shaft. "Driving an actual engine" is broadly interpreted as running an engine under various condition such as different gear ratios as disclosed by the prior art; and not limited to the physical action of a driver and vehicle.)**,

a second step of displaying a control value for the controlled factor for operating the virtual engine **(Fig 19A)**;

a third step of emulating an actual controller that controls an actual engine and supplying an engine control signal to the virtual engine based on the control value **(¶ [0032], lines 1-11 and ¶ [0033], lines 12, teaches the simulator has a group of pseudo-signal generators. The pseudo signals are used to operate the hydraulic actuators such as clutches. Other pseudo signals and the vehicle speed are generated by generators and are input to the simulator main unit)**;

a fourth step of displaying simulation results of operating the virtual engine according to the engine control signal **(Figs. 19A, 19B, and 19C, and ¶ [0093])**; and

the control value is displayed in a time-series graph in the second step**(Figs. 19A, 19B, and 19C, and ¶ [0093])**,

the simulation results are displayed in parallel with the graph display of the control value in the fourth step **(Figs. 19A, 19B, and 19C, and ¶ [0093])**, and

updates the control value displayed in the graph to obtain a new control value in the fifth step **(Fig. 19A and 19C and ¶ [0093] – [0094], teaches calculated (outputted) values of the shift control algorithm are displayed in a graph for verification and evaluation by changing colors of the lines indicative of the calculated and actual values so that they can be discriminated from each other)**.

Hagiwara does not expressly disclose a step of correcting the control value according to the displayed simulation results, until the simulation results satisfy a performance objective; and an operator performs an update according to a point-and drag operation.

Butler, however, correcting the control value according to the displayed simulation results, until the simulation results satisfy a performance objective **(page 1774, § IV. Simulation Studies, ¶ 1 of section, lines 4-10, teaches engine model and motor model were not fine-tuned to a set of physical components, the simulation results have some inaccuracies. The authors design a baseline vehicle and the simulation results are interpreted in comparison to the baseline vehicle.)**; and an operator performs an update according to a point-and drag operation **(page 1771, § II. Drive Train Design Methodology, ¶ 3 of section, lines 10-13, and Fig. 2 and Fig 3, teaches a graphical simulation interface which has drag and drop support to connect components and therefore updates a component.)**

Hagiwara and Butler are analogous art because they are from similar problem solving area of vehicle simulation. At the time of the invention it would have been obvious to person of ordinary skill in the art to utilize the modeling of different drive cycles as discuss in Butler as the

engine model in the simulator discussed by Hagiwara for the purpose of simulation of controllers or control systems to aid engineers in modifying and optimizing characteristics of controls such as transmission controls **(Hagiwara: ¶ [0004], lines 9-13)**.

Hagiwara discloses: As per claim 9 (currently amended), the engine transition test method according to claim 8, further comprising:

a sixth step of providing the control value with which a performance objective has been satisfied by repeating the second through the fifth steps to control the actual engine, and conducting an actual transition test on the actual engine **(¶ [0049], lines 1-13 and [0050], lines 1-15, teaches various sensors are provided at the engine including a first rotational speed sensor that generates a signal indicative of the rotational speed of the transmission input shaft.)**.

Hagiwara does not expressly disclose a step of updating the transition engine model based on results of the transition test, wherein the second through the fifth steps are repeated with the updated transition engine model.

Butler, however, teaches updating the transition engine model based on results of the transition test, wherein the second through the fifth steps are repeated with the updated transition engine model **(page 1771, § II. Drive Train Design Methodology, ¶ 1 of section, lines 6-10, and ¶ 3, lines 8-9, teaches user can switch components in and out of a vehicle model and the component models can be created from empirical equations.)**.

As per **claims 11-14**, note the rejection of claims 4-7 above. The instant claims recite substantially same limitations as the above-rejected claims and are therefore rejected under same prior-art teachings.

Hagiwara discloses: As per **claim 15** (currently amended), a computer readable medium having instructions for causing an information processing system **(see Fig. 1)** to operate:

a simulator for simulating the behavior of a virtual engine by a transition engine model **(¶ [0008], lines 15-20 and ¶ [0034], lines 1-9, teaches first model describing behavior of the engine, second model describing behavior of the transmission)** based on data obtained by driving an actual engine while changing a value of at least one controlled factor **(¶ [0049], lines 1-13 and [0050], lines 1-15, teaches various sensors are provided at the engine including a first rotational speed sensor that generates a signal indicative of the rotational speed of the transmission input shaft. "Driving an actual engine" is broadly interpreted as running an engine under various condition such as different gear ratios as disclosed by the prior art; and not limited to the physical action of a driver and vehicle.)**;

a virtual controller that emulates an actual controller that controls the actual engine, and supplies an engine control signal to the simulator **(¶ [0032], lines 1-11 and ¶ [0033], lines 12, teaches the simulator has a group of pseudo-signal generators. The pseudo signals are used to operate the hydraulic actuators such as clutches. Other pseudo signals and the vehicle speed are generated by generators and are input to the simulator main unit)**;

a control value operation means that supplies a control value for a controlled factor to the virtual controller, that causes simulation results by the simulator to be displayed on a display

screen **(¶ [0035], lines 1-10, teaches simulator unit performs calculation of outputs of the first to third models and verifies and evaluates the stored shift control algorithm while outputting the results of verification and evaluation through a display)**,

wherein the control value used for the simulation is displayed in a time-series graph on the display means along with the simulation results **(Figs. 19A, 19B, and 19C, and ¶ [0093])**, and

the control value operation means updates the control value displayed in the graph to obtain a new control value **(Fig. 19A and 19C and ¶ [0093] – [0094], teaches calculated (outputted) values of the shift control algorithm are displayed in a graph for verification and evaluation by changing colors of the lines indicative of the calculated and actual values so that they can be discriminated from each other)**.

Hagiwara does not expressly disclose updates according to a point-and-drag operation by an operator.

Butler, however, teaches updates according to a point-and-drag operation by an operator **(page 1771, § II. Drive Train Design Methodology, ¶ 3 of section, lines 10-13, and Fig. 2 and Fig 3, teaches a graphical simulation interface which has drag and drop support to connect components and therefore updates a component.)**

Hagiwara and Butler are analogous art because they are from similar problem solving area of vehicle simulation. At the time of the invention it would have been obvious to person of ordinary skill in the art to combine the teachings of modeling of different drive cycles using a graphical simulation interface which has drag and drop support as discuss in Butler in the engine model and simulator discussed by Hagiwara for the purpose of simulation of controllers or

control systems to aid engineers in modifying and optimizing characteristics of controls such as transmission controls **(Hagiwara: ¶ [0004], lines 9-13)**.

Response to Arguments

7. Applicants' arguments filed 07/28/2010 have been fully considered but they are not persuasive.
8. Applicants' amendments to claims are sufficient to overcome 35 U.S.C § 101 rejections. Accordingly, the rejection is withdrawn.
9. Applicants' amendments to claims are sufficient to overcome previously presented 35 U.S.C § 112 rejections. However, additional 35 U.S.C § 112 rejections are present in amended claims as noted above.
10. **<u>Applicants Argue:</u>**

    Applicants argue the combination of Hagiwara and Butler fails to suggest a means for updating the controlled factor values displayed on the time-series graph by an operator wherein a point-and-drag operation by an operator causes output controlled factor values that are viewable on time-series graph to be updated.
11. **<u>Examiner Response:</u>**

    It is noted that claim 1 recites in part "the control value operation means updates the control value displayed in the graph *according to a point-and-drag operation by an operator* to *obtain a new control value*" (emphasis added). The phrase "*according to a point-and-drag operation by an operator to obtain a new control value"* is broadly interpreted as any point and drag operation that results in a new control value. For example, the point and drag operation of components from the component library to update the model would naturally

lead to a new control value. Therefore, Butler's teaching reads on the claim invention as recited.

Conclusion

THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung Havan whose telephone number is (571) 270-7864. The examiner can normally be reached on Monday thru Friday, 9am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamini Shah can be reached on 571-272-2279. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained

from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/H. H./

Examiner, Art Unit 2128

/Kamini S Shah/

Supervisory Patent Examiner, Art Unit 2128